FY06-LV(55)-144

"Gasification of Lignites to Produce Liquid Fuels, Hydrogen, and Power"

Contractor: Energy & Environmental Research Center;
Principal Investigator: Steven A. Benson

PARTICIPANTS

Sponsor	Cost Share
TXU	$ 75,000
Great River Energy	$ 75,000
Rio Tinto Technical Services	98,250
DOE - NETL	$ 2,040,380
NDIC	$ 100,000
Total Cost	$ 2,388,630

Project Schedule - 2 Years
Contract Date – 1/4/06
Start Date – 1/4/06
Completion Date – 10/31/07

Project Deliverables
Contract Signed: 1/4/06
Quarterly Reports:
4/30/06(✓); 11/30/06(✓);
5/31/07( );
Final Report 10/31/07 ( )

OBJECTIVE / STATEMENT OF WORK:

Provide essential information on the impacts of moisture and inorganic impurities on gasifier and gas cleanup technology performance to support power generation and coal-to-liquid processes, addressing key technical challenges facing lignite by conducting small pilot-scale tests to determine cleanup issues of lignite derived syngas for particulate, trace elements, mercury, and sulfur removal as well as carbon dioxide and hydrogen separation for selected lignite(s). A larger-scale pilot transport reactor will be used to determine the impacts of impurities and moisture on advanced sulfur removal, hydrogen purification, and carbon dioxide separation processes.

STATUS

January 1 – June 30, 2006. A kickoff meeting was held on February 15, 2006 in which the project sponsors provided input as to the direction of the project and the specific coals to be characterized. Acquisition of sulfur catalyst/sorbent material was achieved and the conceptual design of the continuous fluidized-bed contactor for sulfur removal and hot-gas filter vessel was accomplished.

July 1 – September 30, 2006. Testing of acquired sorbents has begun using Fourier transform infrared analysis. Work progressed with evaluating ZnO and CuZnO sorbents for their ability to remove sulfur from a flue gas stream at temperatures between 32 and 400 degrees Centigrade. Attempts at acquiring other metal oxide-based materials are continuing. Construction of the sulfur removal reactor is progressing and testing is anticipated next quarter.